REMARKS

The drawings (Figures 1-11) were objected to in the Official Action as allegedly failing to show graphical representation of the correlation as described in the specification, that correlation being between the bone mineral density (the abbreviation DMO derives from the French term for bone mineral density, "la densité minérale osseuse") and the structural parameter a. The Official Action cites Figure 6 specifically as not showing the five points through which the straight line passes. It is believed, however, that the drawings do sufficiently illustrate the correlation between the bone mineral density and the parameter a. Regarding Figure 6, the log-log curve does in fact show the five points through which the straight line passes, as shown annotated below:

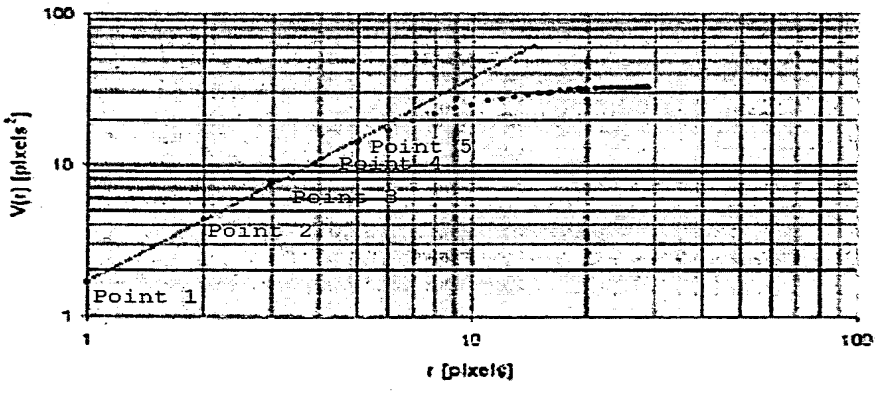

Fig.6

Regarding the correlation as described in the specification, Figure 9 in particular illustrates it. Figure 9 shows the curve of bone mineral density as a function of a. It is shown in this diagram that there is a decidedly positive correlation between the DMO and a; that is to say that when the bone mineral density increases, the parameter a also increases. Furthermore, the figure relates said correlation to the ultimate stress of the bone, as described on page 12 of the specification, "It will be seen on this diagram that when the bone mineral density remains constant, the ultimate stress diminishes when a increases."

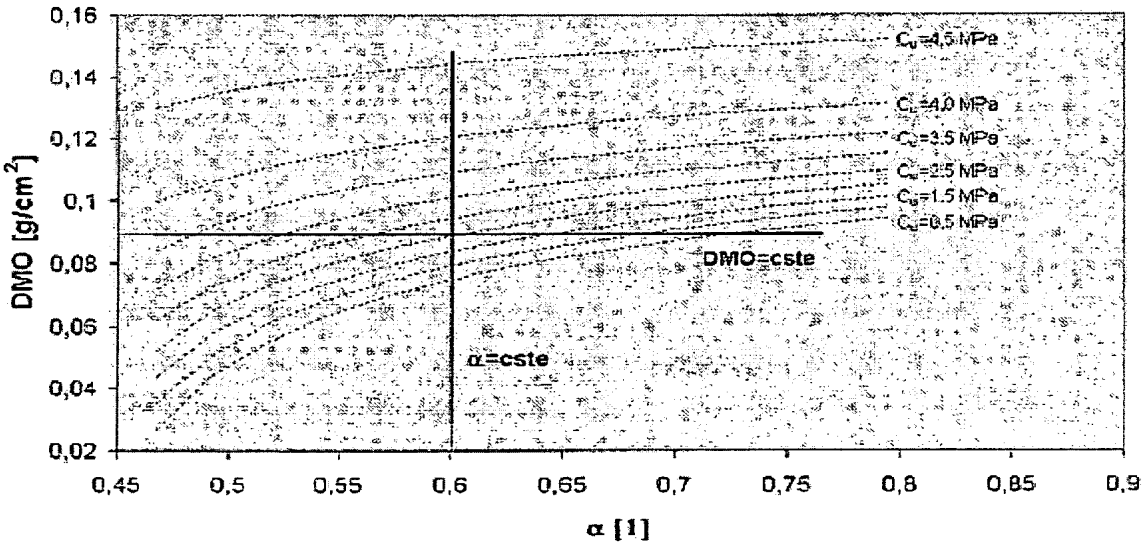

Fig.9

Regarding the claims, applicants note with appreciation the indication of allowability of claims 4-11. By the present amendment, claim 4 is rewritten in independent form, thereby to place claims 4-11 incondition for allowance.

For the reasons discussed below, it is believed that claims 1-3, 12 and 13 are also in condition for allowance.

The new dependent claim 13 specifies that the structural parameter is obtained by calculating a variation function. Support for that claim may be found for example at page 5, lines 1-14 of the specification.

Claims 1-3 and 12 were rejected as allegedly being obvious over Grunkin et al. (US 6,226,393) in view of Majumdar et al. (High resolution Magnetic resonance Imaging: Three dimensional Trabecular Bone Architecture and Biomechanical Properties, 1998). That rejection is respectfully traversed for the following reasons.

The differences between the Grunkin patent and the present invention are not merely the use of an exponential function, as suggested by the Official Action. Another important difference is the use of the bone mineral density in a correlation with a structural parameter obtained from the same two-dimensional image from which the bone mineral density was determined, to determine the mechanical resistance of a bone. In particular, present Claim 1 recites:

> Process for determining the mechanical resistance of a bone from a digitized two dimensional image, obtained by imaging, characterized in that there is carried out a correlation between the bone mineral density determined from this two dimensional image by any means suitable to this type of image and a structural parameter obtained from the same two dimensional image.

The Official Action notes that column 10 of the Grunkin specification mentions the relationship between the wrist bone DMO and the cortical resorption index, but this mention is simply an interpretation of test results. In no way does the patent correlate DMO and a structural parameter of a bone as a way to determine the mechanical resistance of a bone.

The Grunkin patent discloses a method of estimating the "skeletal status" of a vertebrate, in which the estimation is based on:

> 1) at least one variation value, and
> 2) optionally one or more features related to the bone of the vertebrate, and
> 3) a predetermined relationship between
> I) the at least one variation value and
> II) optional feature(s) and
> III) reference skeletal status or bone quality parameters wherein...
> (see, e.g., claim 1 of Grunkin)

In column 6 of the Grunkin patent, bone mineral density is identified as one of these "optional feature(s)."

> In addition to the above-mentioned data, it may be preferred to input additional data relating to the vertebrate in question <u>but which may not be derivable from the image data</u>. This type of data may be information relating to... an estimated Bone Mineral Density.

Thus, even if DMO were utilized in the Grunkin method, Grunkin plainly did not contemplate determining the mechanical resistance of a bone by correlating the bone mineral density as obtained from a given two dimensional image with a structural parameter obtained from the <u>same</u> two dimensional

image from which the bone mineral density was determined, as called for in present Claim 1.

The Majumbar article describes the measurement of DMO by three dimensional imaging techniques QCT and MRI. The content of the Majumbar article relies upon 3D imaging, which the present specification describes as being "difficult and costly examinations, particularly if it is necessary to carry out a longitudinal study of the patient." Because the article relies upon 3D imaging techniques, it could not be combined with the Grunkin patent to result in the present invention, which, although it does not exclude such techniques, does not require them. Furthermore, even if a skilled artisan had thought to combine the two references, it would have been far from obvious for the skilled artisan to develop an estimate of the ultimate strain of the bone using only two-dimensional image data.

It is therefore believed that claims 1-3 and 12, as well as new claim 13, are in condition for allowance along with the allowable claims 4-11.

In view of the present amendment and the foregoing remarks, therefore, it is believed that this application is now in condition for allowance, with claims 1-13 as set forth above. Allowance and passage to issue on that basis are accordingly respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit

any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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for

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